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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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Eastman Chemical Company
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Kingsport, TN 37662-5075

EXAMINER

LEE, RIP A

| ART UNIT | PAPER NUMBER |
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1713

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/053,847

Applicant(s)

PUCKETTE ET AL.

Examiner

Rip A. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 12-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☒ Claim(s) 1-4, 7, 8 and 10 is/are objected to.
- 8) ☒ Claim(s) 1-21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01-22-2002.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-11, drawn to a catalyst system, classified in class 502, subclass 213.
 - II. Claims 12-21, drawn to a process for preparing an aldehyde, classified in class 568, subclass 451.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the process for using the product as claimed can be practiced with another materially different product such as a classical hydroformylation catalyst (*i.e.*, $\text{HRh}(\text{CO})(\text{PPh}_3)_3$). Furthermore, the product as claimed can be used in a materially different process of using that product such as C-H activation.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Eric D. Middlemas on February 19, 2004, a provisional election was made with traverse to prosecute the invention of group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-21 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

7. Claim 1 is objected to because of the following informalities: Delete the second term "comprising" in line 1 of the claim. Appropriate correction is required.

8. Claims 2-4, 7, 8, and 10 are objected to because of the following informalities: Structural features in these claims are described as having "about 12 to 35" carbons (see claim 2, line 4). Since these claims describe limitations in a chemical formula, one should be able to indicate precisely what structures the claims intend to describe. For instance, claim 3, page 27, line 7 states that the total carbon atom content of R^1 and R^2 is "about 12-35." This is technically incorrect because there must be at least 12 carbon atoms collectively, according to embodiments (II), (III), and (IV). A total carbon content of 11 carbon atoms, which satisfies the term "about 12-35" is precluded by the claim.

Other claims using the term "about" to describe chemical formula limitations are: Claim 4, page 29, lines 5 and 12; claim 7, page 31, line 2; claim 8, page 32, lines 2 and 4; claim 10, page 33, lines 9 and 14. Appropriate corrections are required.

9. Claim 2 is objected to because of the following informalities: Please replace "separate" with "separately," and insert "of" after the word "content." Appropriate correction is required.

10. Claim 3 is objected to because of the following informalities: Delete the term "individually" since the term "independently" is used in the sentence. Also, on page 27, line 4 of text, replace "such" with "said." Appropriate correction is required.

11. Claim 8 is objected to because of the following informalities: Delete the word "individually," and replace "such" with "said" (see page 32, line 1). Appropriate correction is required.

12. Claim 10 is objected to because of the following informalities: On page 33, line 13 of text, replace "such" with "said." Appropriate correction is required.

Claim Rejections - 35 USC § 112

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 1 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear whether the "Group VIII metal-containing compound" excludes those having a rhodium metal center.

15. Claims 3, and 8-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are rendered indefinite since they contain improper Markush language (claim 3, page 27, line 1; claim 8, page 31, line 3; claim 9, line 4; claim 10, page 33, line 10; claim 11, page 34, line 2). In claim 9, line 6, the term "water" also needs to be incorporated into the Markush group correctly. See MPEP 2173.05(h): when materials are so related as to constitute a proper Markush group, they may be recited as,

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“wherein R is a material selected from the group consisting of A, B, C, and D,” or “wherein R is A, B, C, or D.”

16. Claims 3-5 and 7-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. There is insufficient antecedent basis for the limitation “fluorophosphite ligand” in the claims. The recitations may be found as follows: claim 3, page 27, line 8; claim 4, page 29, line 13; claim 5, page 29, line 2; claim 7, page 31, line 8; claim 8, page 32, line 5; claim 9, line 2; claim 10, page 33, line 16; and claim 11, page 33, line 2.

17. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites the limitation “dihydrocarbyl fluorophosphite compound.” There is insufficient antecedent basis for this limitation in the claim.

18. Claims 9 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites the limitation on page 33, line 2. There is insufficient antecedent basis for the limitation “the process” in the claims (see claim 9, page 33, line 2; claim 11, page 34, line 5).

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

21. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,840,647 to Puckette *et al.* in view of U.S. Patent No. 5,756,855 to Abatjoglou *et al.*

Puckette *et al.* teaches a catalyst system comprising a diorganofluorophosphite compound and rhodium (claim 1). The structures of the inventive diorganofluorophosphite compounds meet all the structural limitations of the present claims (see claims 3-5). In particular, the bridged, diphenylene fluorophosphite shown in claims 6 and 7 of the prior art satisfy the limitations set forth in present claims 5 and 6. The mole ratio of fluorophosphite to rhodium lie in the range of 1:1 to 100:1 (col. 7, line13). A catalyst solution is also described since the reactions using the catalyst is performed in solvent such as toluene (i.e., example 3). The

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reference teaches all aspects of the present invention except use of a group VIII metal other than rhodium or a group VIII metal containing compound.

Such a procedure is routine in the art. The Abatjoglou *et al.* reference discusses the need for preventing catalyst deactivation *via* ligand decomposition in hydroformylation processes. To solve this problem, the inventors use another group VIII metal species in conjunction with the rhodium-containing compound to stabilize the rhodium complex against degradation. The stabilizing compound such as $\text{Co}_2(\text{CO})_8$ is used in an amount of 1-5 moles per mole of rhodium (see example 3, claim 6, col. 16, line 59), and this amount was shown to lower significantly the extent of decomposition in hydroformylation.

It would have been obvious to one having ordinary skill in the art, cognizant of catalyst deactivation problems associated with hydroformylation, to use an effective amount of cobalt complex in the hydroformylation process described in Puckette *et al.* in order to enhance catalyst activity, as shown by Abatjoglou *et al.* Since this practice is exemplified adequately in the references, the skilled artisan would have expected such an embodiment to work.

The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure. The following references have been cited to show the state of the art with respect to novel hydroformylation processes.

U.S. Patent No. 6,232,263 to Tolleson *et al.*

U.S. Patent No. 6,130,358 to Tolleson *et al.*


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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February 23, 2004


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